CLAIMS

1. In a wireless communications system wherein an equalizer is used to reduce interference on a communications channel, and wherein a Doppler frequency is reflective of a rate of change of the communications channel, a method for adjusting a length of the equalizer comprising increasing the length as the Doppler frequency decreases, and decreasing the length as the Doppler frequency increases.

2. The method of claim 1, wherein the equalizer comprises a main tap, a first number of causal taps, and a second number of anti-causal taps, and wherein said increasing comprises determining whether said causal taps are more useful than said anti-causal taps, and if so, increasing said first number, and if not, increasing said second number.

3. The method of claim 2, wherein said decreasing comprises determining whether said causal taps are more useful than said anti-causal taps, and if so, decreasing said second number, and if not, decreasing said first number.

4. The method of claim 1, wherein said increasing comprises determining whether an elapsed time since the equalizer was last adjusted is greater than a threshold, and if so, increasing the length as the Doppler frequency decreases.

5. The method of claim 1, wherein said increasing comprises determining whether an elapsed time since the length was last decreased is greater than a threshold, and if so, increasing the length as the Doppler frequency decreases.

6. The method of claim 1, wherein said decreasing comprises determining whether an elapsed time since the equalizer was last adjusted is greater than a threshold, and if so, decreasing the length as the Doppler frequency increases.

7. The method of claim 1, wherein said decreasing comprises determining whether an elapsed time since the length was last increased is greater than a threshold, and if so, decreasing the length as the Doppler frequency increases.

8. A method comprising:

receiving transmitted symbols over a wireless communications channel;

receiving a first Doppler frequency, wherein said first Doppler frequency is reflective of a rate of change of said wireless communications channel at a first time; and

selecting a length of an equalizer based on said first Doppler frequency.

9. The method of claim 8, further comprising filtering said transmitted symbols using said equalizer.

10. The method of claim 8, further comprising:

receiving a second Doppler frequency that is reflective of a rate of change of said wireless communications channel at a second time;

determining a difference between said first Doppler frequency and said second Doppler frequency; and

adjusting said length responsive to determining said difference.

11. The method of claim 10, wherein said adjusting comprises:

determining an elapsed time since a prior adjustment to said length; and

determining whether said elapsed time satisfies an elapsed time threshold, and if so, adjusting said length based on said difference.

12. The method of claim 10, wherein said adjusting comprises determining whether said difference is reflective of an increase that satisfies a first threshold, and if so, decreasing said length.

13. The method of claim 12, wherein said equalizer comprises a main tap, a first number of causal taps, and a second number of anti-causal taps, and wherein said decreasing said length comprises determining whether said causal taps are more useful than said anti-causal taps, and if so, decreasing said second number, and if not, decreasing said first number.

14. The method of claim 13, wherein said determining whether said causal taps are more useful than said anti-causal taps comprises:

calculating a first average of the magnitudes of said causal taps;

calculating a second average of the magnitudes of said anti-causal taps; and

determining whether said first average is greater than said second average, and if so, determining that said causal taps are more useful, and if not, determining that said anti-causal taps are more useful.

15. The method of claim 13, wherein said determining whether said causal taps are more useful than said anti-causal taps comprises:

calculating a first magnitude of the causal tap furthest from said main tap;

calculating a second magnitude of the anti-causal tap furthest from said main tap; and

determining whether said first magnitude is greater than said second magnitude, and if so, determining that said causal taps are more useful, and if not, determining that said anti-causal taps are more useful.

16. The method of claim 13, wherein said increasing said length comprises determining whether said causal taps are more useful than said anti-causal taps, and if so, increasing said first number, and if not, increasing said second number.

17. The method of claim 12, wherein said equalizer comprises a main tap, a first number of causal taps, and a second number of anti-causal taps, and wherein said decreasing said length comprises decreasing said first and second number equally.

18. The method of claim 17, wherein said increasing said length comprises determining whether said first number is less than said second number, and if so, increasing said first number, and if not, increasing said second number, and if said first number is equal to said second number, increasing said first number and said second number equally.

19. The method of claim 10, wherein said adjusting comprises determining whether said difference is reflective of a decrease that satisfies a second threshold, and if so, increasing said length.

20. The method of claim 8, wherein said selecting comprises:

quantizing said first Doppler frequency into a first frequency bin having a first bin center; and

determining said length using said first bin center.

21. The method of claim 20, wherein said determining said length comprises consulting a look-up table, wherein said look-up table associates said length with said first bin center.

22. The method of claim 8, further comprising:

quantizing said first Doppler frequency into a first frequency bin having a first bin center;

receiving a second Doppler frequency that is reflective of a rate of change of said wireless communications channel at a second time subsequent to said first time;

determining a first difference between said first bin center and said second Doppler frequency; and

adjusting said length based on said difference.

23. The method of claim 22, further comprising setting a bin center memory to said first bin center, and wherein said adjusting comprises:

determining whether said first difference is reflective of an increase that satisfies a first threshold, and if so,

decreasing said length,

quantizing said second Doppler frequency into a second frequency bin having a second bin center, and

setting said bin center memory to said second bin center; and

determining whether said first difference is reflective of a decrease that satisfies a second threshold, and if so,

increasing said length,

quantizing said second Doppler frequency into a third frequency bin having a third bin center, and

setting said bin center memory to said third bin center.

24. The method of claim 23, further comprising:

receiving a third Doppler frequency that is reflective of a rate of change of said wireless communications channel at a third time subsequent to said second time;

determining a second difference between said bin center memory and said third Doppler frequency; and

adjusting said length based on said second difference.

25. An equalizer for reducing interference on a wireless communications channel, wherein a Doppler frequency is reflective of a rate of change of the wireless communications channel, said equalizer comprising:

a main tap;

a first number of causal taps;

a second number of anti-causal taps; and

means for selecting said first and second number based on the Doppler frequency.

26. The equalizer of claim 25, wherein said means for selecting comprises:

means for initializing said first number and said second number using a first estimate of the Doppler frequency; and

means for adjusting said first number and said second number using a second estimate of the Doppler frequency subsequent to said first estimate.

27. The equalizer of claim 26, wherein said means for initializing comprises:

means for quantizing said first estimate into a first frequency bin having a first bin center; and

means for determining said first number and said second number using said first bin center.

28. The equalizer of claim 27, wherein said means for determining comprises a look-up table.

29. The equalizer of claim 26, wherein a length of the equalizer is reflective of the sum of said first number and said second number, and wherein said means for adjusting comprises:

means for determining whether said second estimate exceeds said first estimate by an amount satisfying a first threshold, and if so, for decreasing said length; and

means for determining whether said second estimate is less than said first estimate by an amount satisfying a second threshold, and if so, for increasing said length.

30. The equalizer of claim 29, wherein said means for decreasing comprises means for determining whether said causal taps are more useful than said anti-causal taps, and if so, for decreasing said second number, and if not, for decreasing said first number.

31. The equalizer of claim 30, wherein said means for increasing comprises means for determining whether said causal taps are more useful than said anti-causal taps, and if so, for increasing said first number, and if not, for increasing said second number.

32. The equalizer of claim 29, wherein said means for decreasing comprises means for determining whether an elapsed time since said length was last increased satisfies a threshold, and if so, for decreasing said length.

33. The equalizer of claim 32, wherein said means for increasing comprises means for determining whether an elapsed time since said length was last decreased satisfies a threshold, and if so, for increasing said length.